had been previously healthy in every respect.

The various species of *Pestalozzia* have been known as parasites in Europe, causing disease of conifers of one to several years' age. The same fungus was found in 1903 in Texas and also upon young pine trees from North Carolina and New York in 1906 by the writer. There can be little doubt that it occurs generally in the United States, and sometimes at least, as a true parasite. The fact that it occurs as a parasite upon young conifers seems not to have been proved in this country by other workers. The present article may be taken as a warning to managers of conifer nurseries, as it is more than likely that similar outbreaks of this disease will be noted in the near future. Removing the diseased trees and burning them, accompanied by thorough spraying of the remainder with Bordeaux mixture containing some adhesive substance to make it cover the smooth needles, should completely control the trouble and stop its spread into unaffected seed beds.

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NORMAL FAULTING IN THE BULLFROG DISTRICT

THE Bullfrog Mining District is situated in southern Nevada, about ten miles from the California line, and sixty miles south-southeast of Goldfield. The towns within the district are Rhyolite, Beatty and Bullfrog. In 1906 Mr. G. H. Garrey and the speaker mapped the general geology of a strip across the district, seven miles long and three miles wide. The country is a desert, the rocks are bare and exposures are exceptionally good. The relief is about 2,500 feet. Mining exploration has added greatly to the natural exposures, and conditions for field work are unusual.

The oldest rocks form a crystalline complex, consisting in the main of quartz-biotite schists, quartzites, limestone, pegmatite, injection schists and gneisses, which surround small areas of sheared diorites. This complex is the equivalent of a series of sedimentary rocks which has been greatly metamorphosed. Above the schists is a massive limestone, about 100 feet thick, probably Silurian. In faulted contact with the limestone and older rocks is a great series of Tertiary lava flows with subordinate beds of sedimentary tuffs, limestone and shale, altogether about 7,000 feet thick. Of the lava flows there are sixteen separable divisions of rhyolite, five basalt flows, one flow of dacite, and one of quartz basalt. Stratified tuffs of sedimentary origin occur at two horizons, with numerous lava flows between. The Tertiary rocks are approximately conformable one with another in dip, though there are slight erosional unconformities at several places. Basalt dikes, most of which are along fault fissures, cut the older lavas. There was much faulting after the dikes were intruded, and the rhyolite-basalt contacts afforded planes of weakness which were taken advantage of in nearly every instance. Dikes and other intrusive masses of rhyolite also cut the lavas. At three places there are small outcrops of leucite basanite.

The bedded rocks dip eastward at angles averaging 27° and are traversed by faults, most of which strike northeast and dip west. Most of the faults are nearly perpendicular to the beds and all are normal, that is, the down-throw appears to have been down the dip of fault planes and consequently the west block is, in most cases, depressed, or the block east of the fault plane is elevated with respect to the down-thrown or hanging-wall side. Since the dip of the beds is to the east and the dip of the faults to the west, the same beds occur repeatedly. Before deformation the beds were approximately horizontal. In the deformation two processes operated; faulting, which tended to lower the beds to the west or raise them to the east; and monoclinal folding or tilting, which tended to raise the beds towards the west or lower them to the east. A seven-mile east and west section across the area shows that the eastward depression due to tilting is 12,400 feet, which is only 1,300 feet more than the westward depression due to faulting, or that the result of both processes was to leave the beds at about the same elevation at the east and at

the west borders of the area. The throw of the faults varies from a few feet to 5,000 feet. There are two systems or groups, one of which strikes nearly north and the other about 35° east of north. The Tertiary rocks are not closely folded, but the dip of the beds in any single block is nearly uniform.

It is improbable that any considerable amount of tilting or faulting occurred before all of the Tertiary lavas were extravasated, for the dip of early and of late flows is nearly uniform, and lavas do not overlap faults. The tilting occurred before or after faulting, or else the two processes went on together. If all of the tilting had occurred before the faulting then a given bed at the east border of the area should at that time have been 12,400 feet lower than the same bed at the west border. Evidence of such relief should be preserved if the period between the deformation by the two processes had been sufficient for a considerable amount of erosion, and a large thickness of derived sedimentary rocks should probably have resulted from the erosion of this series. On the other hand, if the faulting had occurred first and the interval was considerable, the relief and consequent intervening erosion would have been equally great. Since there are no faulted rocks not tilted, or tilted rocks not faulted, it is presumed that faulting and tilting operated at the same time or close together.

Tilting before faulting implies a vertical movement of parts of the earth's surface of more than two miles, followed by another vertical movement equally great and of a different character. Faulting before tilting implies equivalent movements in reverse order. Since the processes operated close together, this is regarded as improbable. It is, therefore, assumed that faulting and tilting occurred at the same time, and that the movement was largely rotational, each block moving independently, being tilted as it was faulted. The result is like the fall of a row of books when some are removed from the shelf. It is to be noted that when the books fall and become inclined 27° from an upright position, there is an extension of a line drawn horizontally through them equal to 12 per cent.; that is, some books must be removed if the remainder fall. Unless there was extension due to revolution some of the blocks must move out laterally in order that the other blocks may settle. The faults are not quite parallel in strike, but two systems make 35° angles with each other. Accordingly, some of the blocks would present wedge-shaped edges to any section and these during deformation could easily move laterally outward. That lateral movement did take place is abundantly recorded by nearly flat striæ on horizontal surfaces. The effect of all deformation was to greatly extend the surface east and west in the direction of the dip of the beds.

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QUOTATIONS

THE NOBEL PRIZES

Regret has already been expressed here that the confidence placed by Nobel in his native land has not been justified. His large fortune was made in Great Britain by the discovery and manufacture of dynamite, and it seems likely that the instructions of his will would have been more adequately carried out if their execution had been entrusted to the Royal Society and the British courts. Nobel doubtless believed that the international obligations would be fully met by the Scandinavian countries, and it is truly sad and discouraging that there should be lack of good faith in the administration of a fund intended, as the testator states, "to benefit mankind."

Nobel's will is perfectly clear and explicit. It directs that the interest from the fund "shall be divided into five equal parts," which shall be annually awarded in prizes to those persons who shall have contributed most materially to benefit mankind during the year immediately preceding. "One share to the person who shall have made the most important discovery or invention in the domain of physics; one share to the person who shall have made the most important chemical discovery or improvement; one share to the person who shall have made the most important discovery in the domain of physiology or medicine; one share to the person who shall